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## RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/062,624

DATE: 02/26/2002

TIME: 11:03:44

Input Set : A:\D6152CIP2-D1SEQ.txt

Output Set: N:\CRF3\02262002\J062624.raw

1 <110> APPLICANT: Walker, David H.  
 2 McBride, Jere W.  
 3 Yu, Xue-Jie  
 5 <120> TITLE OF INVENTION: Homologous 28-Kilodalton Immunodominant Protein  
 6 Genes of Ehrlichia canis and Uses Thereof  
 8 <130> FILE REFERENCE: D6152CIP2/D1  
 W--> 10 <140> CURRENT APPLICATION NUMBER: US/10/062,624  
 10 <141> CURRENT FILING DATE: 2002-01-31  
 12 <150> PRIOR APPLICATION NUMBER: 09/660,587  
 13 <151> PRIOR FILING DATE: 2000-09-12  
 15 <160> NUMBER OF SEQ ID NOS: 46  
 18 <210> SEQ ID NO: 1  
 19 <211> LENGTH: 1607  
 20 <212> TYPE: DNA  
 21 <213> ORGANISM: Ehrlichia canis  
 23 <220> FEATURE:  
 24 <223> OTHER INFORMATION: nucleic acid sequence of E. canis p28-7  
 26 <400> SEQUENCE: 1  
 27 atttttatttta ttaccaatct tatataatat attaaatttc tcttacaaaa 50  
 28 atctctaattg ttttataacct aatataatata ttctggcttg tatctacttt 100  
 29 gcaacttcac tattgttaatt ttattttcac tatttttaggt gtaatatgaa 150  
 30 ttgcaaaaaa attcattataa caactgcatt aatatcatta atgtactcta 200  
 31 ttccaagcat atctttttct gatactatac aagatggtaa catgggtggg 250  
 32 aactttctata ttagtggaata gtatgtacca agtgtctcac attttggtag 300  
 33 cttctcagct aaagaagaaa gcaaatcaac tgttgaggtt tttggattaa 350  
 34 aacatgattg ggatggaagt ccaatactta agaataaaca cgctgacttt 400  
 35 actgttccaa actattcggt cagatacgag aacaatccat ttctagggtt 450  
 36 tgcaggagct atcggttact caatgggttg cccaagaata gaattcgaaa 500  
 37 tatcttatga agcattcgac gtaaaaagtc ctaatatcaa ttatcaaaat 550  
 38 gacgcgcaca ggtactgcgc tctatctcat cacacatcgg cagccatgga 600  
 39 agctgataaa tttgtcttct taaaaaacga agggttaatt gacatatcac 650  
 40 ttgcaataaa tgcattgtat gatataataa atgacaaagt acctgtttct 700  
 41 ccttatatat gcgcagggtat tggtagtgat ttgatttcta tgtttgaagc 750  
 42 tacaagtcct aaaattttct accaaggaaa actgggcatt agttactcta 800  
 43 ttaatccgga aacctctggt ttcatcggtg ggcatttcca caggatcata 850  
 44 ggtaagtagt ttagagatat tcttgcaata gtacctagta actcaactac 900  
 45 aataagtgga ccacaatttg caacagtaac actaaatgtg tgtcactttg 950  
 46 gtttagaact tggaggaaga tttaacttct aattttattg ttgccacata 1000  
 47 ttaaaaatga tctaaacttg tttttawtat tgctacatac aaaaaaagaa 1050  
 48 aaatagtggc aaaagaatgt agcaataaga gggggggggg ggaccaaatt 1100  
 49 tatcttctat gcttcccaag ttttttcygc ctattttatga cttaaacac 1150  
 50 agaaggtaat atcctcacgg aaaacttata ttcaaataatt ttatttatta 1200  
 51 ccaatcttat ataatatatt aaattttctt tacaaaaatc actagtattt 1250

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Input Set : A:\D6152CIP2-D1SEQ.txt

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52 tataacaaaa tatatatctt gacttgcttt tcttctgcac ttctactatt 1300
53 ttttaatttat ttgtcactat taggttataa taawatgaat tgcmaaagat 1350
54 ttttcatagc aagtgcattg atatcactaa tgtctttctt acctagcgta 1400
55 tctttttctg aatcaataca tgaagataat ataaatggta acttttacat 1450
56 tagtgcaaag tatatgccaa gtgcctcaca ctttggcgta ttttcagtta 1500
57 aagaagagaa aaacacaaca actggagttt tcggattaaa acaagattgg 1550
58 gacggagcaa cactaaagga tgcaagcwgc agccacacaw tagaccaag 1600
59 tacaatg 1607

61 <210> SEQ ID NO: 2
62 <211> LENGTH: 278
63 <212> TYPE: PRT
64 <213> ORGANISM: Ehrlichia canis
66 <220> FEATURE:
67 <223> OTHER INFORMATION: amino acid sequence of E. canis p28-7 protein
70 <400> SEQUENCE: 2
71 Met Asn Cys Lys Lys Ile Leu Ile Thr Thr Ala Leu Ile Ser Leu
72 5 10 15
73 Met Tyr Ser Ile Pro Ser Ile Ser Phe Ser Asp Thr Ile Gln Asp
74 20 25 30
75 Gly Asn Met Gly Gly Asn Phe Tyr Ile Ser Gly Lys Tyr Val Pro
76 35 40 45
77 Ser Val Ser His Phe Gly Ser Phe Ser Ala Lys Glu Glu Ser Lys
78 50 55 60
79 Ser Thr Val Gly Val Phe Gly Leu Lys His Asp trp Asp Gly Ser
80 65 70 75
81 Pro Ile Leu Lys Asn Lys His Ala Asp Phe Thr Val Pro Asn Tyr
82 80 85 90
83 Ser Phe Arg Tyr Glu Asn Asn Pro Phe Leu Gly Phe Ala Gly Ala
84 95 100 105
85 Ile Gly Tyr Ser Met Gly Gly Pro Arg Ile Glu Phe Glu Ile Ser
86 110 115 120
87 Tyr Glu Ala Phe Asp Val Lys Ser Pro Asn Ile Asn Tyr Gln Asn
88 125 130 135
89 Asp Ala His Arg Tyr Cys Ala Leu Ser His His Thr Ser Ala Ala
90 140 145 150
91 Met Glu Ala Asp Lys Phe Val Phe Leu Lys Asn Glu Gly Leu Ile
92 155 160 165
93 Asp Ile Ser Leu Ala Ile Asn Ala Cys Tyr Asp Ile Ile Asn Asp
94 170 175 180
95 Lys Val Pro Val Ser Pro Tyr Ile Cys Ala Gly Ile Gly Thr Asp
96 185 190 195
97 Leu Ile Ser Met Phe Glu Ala Thr Ser Pro Lys Ile Ser Tyr Gln
98 200 205 210
99 Gly Lys Leu Gly Ile Ser Tyr Ser Ile Asn Pro Glu Thr Ser Val
100 215 220 225
101 Phe Ile Gly Gly His Phe His Arg Ile Ile Gly Asn Glu Phe Arg
102 230 235 240
103 Asp Ile Pro Ala Ile Val Pro Ser Asn Ser Thr Thr Ile Ser Gly
104 245 250 255

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PATENT APPLICATION: US/10/062,624

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Input Set : A:\D6152CIP2-D1SEQ.txt

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105 Pro Gln Phe Ala Thr Val Thr Leu Asn Val Cys His Phe Gly Leu  
 106 260 265 270

107 Glu Leu Gly Gly Arg Phe Asn Phe

108 275

110 <210> SEQ ID NO: 3

111 <211> LENGTH: 849

112 <212> TYPE: DNA

113 <213> ORGANISM: Ehrlichia canis

115 <220> FEATURE:

116 <221> NAME/KEY: mat\_peptide

117 <223> OTHER INFORMATION: nucleic acid sequence of p28-5

119 <400> SEQUENCE: 3

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120 atgaattgta aaaaagtttt cacaataagt gcattgatat catccatata 50
121 cttcctacct aatgtctcat actotaaccc agtatatggt aacagtatgt 100
122 atggtaatTTT ttacatatca ggaaagtaca tgccaagtgt tcctcatttt 150
123 ggaatttttt cagctgaaga agagaaaaaa aagacaactg tagtatatgg 200
124 cttaaaagaa aactgggcag gagatgcaat atctagtcaa agtccagatg 250
125 ataattttac cattcgaaat tactcattca agtatgcaag caacaagttt 300
126 ttaggggtttg cagtagctat tggttactcg ataggcagtc caagaataga 350
127 agttgagatg tcttatgaag catttgatgt gaaaaatcca ggtgataatt 400
128 acaaaaaacgg tgcttacagg tattgtgctt tatctcatca agatgatgcg 450
129 gatgatgaca tgactagtgc aactgacaaa ttgttatatt taattaatga 500
130 aggattactt aacatatcat ttatgacaaa catatgttat gaaacagcaa 550
131 gcaaaaatat acctctctct ccttacatat gtgcaggtat tggtagtgat 600
132 ttaattcaca tgtttgaaac tacacatcct aaaatttctt atcaaggaaa 650
133 gctagggttg gcctacttcg taagtgcaga gtcttcggtt tcttttggtg 700
134 tataatttca taaaattata aataataagt taaaaaatgt tccagccatg 750
135 gtacctatta actcagacga gatagtagga ccacagtttg caacagtaac 800
136 attaaatgta tgctactttg gattagaact tggatgtagg ttcaacttc 849

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138 <210> SEQ ID NO: 4

139 <211> LENGTH: 283

140 <212> TYPE: PRT

141 <213> ORGANISM: Ehrlichia canis

143 <220> FEATURE:

144 <223> OTHER INFORMATION: amino acid sequence of p28-5 protein

W--> 145 <400> SEQUENCE: 4

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146 Met Asn Cys Lys Lys Val Phe Thr Ile Ser Ala Leu Ile Ser Ser
147 5 10 15
148 Ile Tyr Phe Leu Pro Asn Val Ser Tyr Ser Asn Pro Val Tyr Gly
149 20 25 30
150 Asn Ser Met Tyr Gly Asn Phe Tyr Ile Ser Gly Lys Tyr Met Pro
151 35 40 45
152 Ser Val Pro His Phe Gly Ile Phe Ser Ala Glu Glu Glu Lys Lys
153 50 55 60
154 Lys Thr Thr Val Val Tyr Gly Leu Lys Glu Asn Trp Ala Gly Asp
155 65 70 75
156 Ala Ile Ser Ser Gln Ser Pro Asp Asp Asn Phe Thr Ile Arg Asn
157 80 85 90
158 Tyr Ser Phe Lys Tyr Ala Ser Asn Lys Phe Leu Gly Phe Ala Val

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PATENT APPLICATION: US/10/062,624

DATE: 02/26/2002

TIME: 11:03:44

Input Set : A:\D6152CIP2-D1SEQ.txt

Output Set: N:\CRF3\02262002\J062624.raw

159	95	100	105
160	Ala Ile Gly Tyr Ser Ile Gly Ser Pro Arg Ile Glu Val Glu Met		
161	110	115	120
162	Ser Tyr Glu Ala Phe Asp Val Lys Asn Pro Gly Asp Asn Tyr Lys		
163	125	130	135
164	Asn Gly Ala Tyr Arg Tyr Cys Ala Leu Ser His Gln Asp Asp Ala		
165	140	145	150
166	Asp Asp Asp Met Thr Ser Ala Thr Asp Lys Phe Val Tyr Leu Ile		
167	155	160	165
168	Asn Glu Gly Leu Leu Asn Ile Ser Phe Met Thr Asn Ile Cys Tyr		
169	170	175	180
170	Glu Thr Ala Ser Lys Asn Ile Pro Leu Ser Pro Tyr Ile Cys Ala		
171	185	190	195
172	Gly Ile Gly Thr Asp Leu Ile His Met Phe Glu Thr Thr His Pro		
173	200	205	210
174	Lys Ile Ser Tyr Gln Gly Lys Leu Gly Leu Ala Tyr Phe Val Ser		
175	215	220	225
176	Ala Glu Ser Ser Val Ser Phe Gly Ile Tyr Phe His Lys Ile Ile		
177	230	235	240
178	Asn Asn Lys Phe Lys Asn Val Pro Ala Met Val Pro Ile Asn Ser		
179	245	250	255
180	Asp Glu Ile Val Gly Pro Gln Phe Ala Thr Val Thr Leu Asn Val		
181	260	265	270
182	Cys Tyr Phe Gly Leu Glu Leu Gly Cys Arg Phe Asn Phe		
183	275	280	
185	<210> SEQ ID NO: 5		
186	<211> LENGTH: 840		
187	<212> TYPE: DNA		
188	<213> ORGANISM: Ehrlichia canis		
190	<220> FEATURE:		
191	<221> NAME/KEY: mat_peptide		
192	<223> OTHER INFORMATION: nucleic acid sequence of p28-6		
194	<400> SEQUENCE: 5		
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196	ctatgctcca agcatatctt tttctgatac tataacaagac gataacactg	100	
197	gtagcttcta catcagtgga aaatatgtac caagtgtttc acattttggt	150	
198	gttttctcag ctaaagaaga aagaaactca actggtggag tttttggatt	200	
199	aaaacatgat tggaatggag gtacaatatc taactcttct ccagaaaata	250	
200	tattcacagt tcaaaattat tcgtttaaat acgaaaacaa cccattctta	300	
201	gggtttgcag gagctattgg ttattcaatg ggtggcccaa gaatagaact	350	
202	tgaagtcttg tacgagacat tcgatgtgaa aaatcagaac aataattata	400	
203	agaacggcgc acacagatac tgtgctttat ctcatcatag ttcagcaaca	450	
204	agcatgtcct cgcgaagtaa caaatgtgtt ttcttaaaaa atgaagggtt	500	
205	aattgactta tcatttatga taaatgcatt ctatgacata ataattgaag	550	
206	gaatgccttt ttcaccttat atttgtgcag gtgttggtac tgatgttgtt	600	
207	tccatgtttg aagctataaa tcctaaaatt tcttaccaag gaaaactagg	650	
208	attaggttat agtataagtt cagaagcctc tgtttttatc ggtggacact	700	
209	ttcacagagt cataggtaat gaatttagag acatccctgc tatggttcct	750	
210	agtggatcaa atcttcaga aaaccaattt gcaatagtaa cactaaatgt	800	

## RAW SEQUENCE LISTING

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TIME: 11:03:44

Input Set : A:\D6152CIP2-D1SEQ.txt

Output Set: N:\CRF3\02262002\J062624.raw

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211 gtgtcacttt ggcataagaac ttggaggaag atttaacttc      840
214 <210> SEQ ID NO: 6
215 <211> LENGTH: 280
216 <212> TYPE: PRT
217 <213> ORGANISM: Ehrlichia canis
219 <220> FEATURE:
220 <223> OTHER INFORMATION: amino acid sequence of p28-6 protein
222 <400> SEQUENCE: 6
223 Met Asn Cys Lys Lys Ile Leu Ile Thr Thr Ala Leu Met Ser Leu
224           5           10           15
225 Met Tyr Tyr Ala Pro Ser Ile Ser Phe Ser Asp Thr Ile Gln Asp
226           20           25           30
227 Asp Asn Thr Gly Ser Phe Tyr Ile Ser Gly Lys Tyr Val Pro Ser
228           35           40           45
229 Val Ser His Phe Gly Val Phe Ser Ala Lys Glu Glu Arg Asn Ser
230           50           55           60
231 Thr Val Gly Val Phe Gly Leu Lys His Asp Trp Asn Gly Gly Thr
232           65           70           75
233 Ile Ser Asn Ser Ser Pro Glu Asn Ile Phe Thr Val Gln Asn Tyr
234           80           85           90
235 Ser Phe Lys Tyr Glu Asn Asn Pro Phe Leu Gly Phe Ala Gly Ala
236           95          100          105
237 Ile Gly Tyr Ser Met Gly Gly Pro Arg Ile Glu Leu Glu Val Leu
238          110          115          120
239 Tyr Glu Thr Phe Asp Val Lys Asn Gln Asn Asn Asn Tyr Lys Asn
240          125          130          135
241 Gly Ala His Arg Tyr Cys Ala Leu Ser His His Ser Ser Ala Thr
242          140          145          150
243 Ser Met Ser Ser Ala Ser Asn Lys Phe Val Phe Leu Lys Asn Glu
244          155          160          165
245 Gly Leu Ile Asp Leu Ser Phe Met Ile Asn Ala Cys Tyr Asp Ile
246          170          175          180
247 Ile Ile Glu Gly Met Pro Phe Ser Pro Tyr Ile Cys Ala Gly Val
248          185          190          195
249 Gly Thr Asp Val Val Ser Met Phe Glu Ala Ile Asn Pro Lys Ile
250          200          205          210
251 Ser Tyr Gln Gly Lys Leu Gly Leu Gly Tyr Ser Ile Ser Ser Glu
252          215          220          225
253 Ala Ser Val Phe Ile Gly Gly His Phe His Arg Val Ile Gly Asn
254          230          235          240
255 Glu Phe Arg Asp Ile Pro Ala Met Val Pro Ser Gly Ser Asn Leu
256          245          250          255
257 Pro Glu Asn Gln Phe Ala Ile Val Thr Leu Asn Val Cys His Phe
258          260          265          270
259 Gly Ile Glu Leu Gly Gly Arg Phe Asn Phe
260          275          280
262 <210> SEQ ID NO: 7
263 <211> LENGTH: 133
264 <212> TYPE: PRT

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VERIFICATION SUMMARY

PATENT APPLICATION: US/10/062,624

DATE: 02/26/2002

TIME: 11:03:45

Input Set : A:\D6152CIP2-D1SEQ.txt

Output Set: N:\CRF3\02262002\J062624.raw

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L:145 M:283 W: Missing Blank Line separator, <400> field identifier  
L:940 M:283 W: Missing Blank Line separator, <220> field identifier  
L:1043 M:283 W: Missing Blank Line separator, <220> field identifier  
L:1045 M:283 W: Missing Blank Line separator, <400> field identifier